UNITED STATES PATENT AND TRADEMARK OFFICE

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10/550,806	12/13/2006	Mario Gerla	51990/JEC/R268	3983

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _13 December 2006_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-20_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-20_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _23 September 2005_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _See Continuation Sheet_.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :31 JUly 2007, 20 August 2007, 14 September 2007.

DETAILED ACTION

Abstract Objection

1.   The abstract of the disclosure is objected to because the phrase

"improved data transmission" is improper language. Correction is required. See

MPEP § 608.01(b).

2.   Applicant is reminded of the proper language and format for an abstract of
the disclosure.

The abstract should be in narrative form and generally limited to a single
paragraph on a separate sheet within the range of 50 to 150 words. It is
important that the abstract not exceed 150 words in length since the space
provided for the abstract on the computer tape used by the printer is limited. The
form and legal phraseology often used in patent claims, such as "means" and
"said," should be avoided. The abstract should describe the disclosure
sufficiently to assist readers in deciding whether there is a need for consulting the
full patent text for details.

The language should be clear and concise and should not repeat
information given in the title. It should avoid using phrases which can be implied,
such as, "The disclosure concerns," "The disclosure defined by this invention,"
"The disclosure describes," etc.

Claim Objections

3.   Claim 10 is objected to because of the following informalities: It is

suggested to applicant to change "he" to –the-.

Claim Rejections - 35 USC § 101

4.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or
> composition of matter, or any new and useful improvement thereof, may obtain a patent
> therefor, subject to the conditions and requirements of this title.

Claims 11-20 are rejected under 35 U.S.C. 101 because the claimed

invention is directed to non-statutory subject matter.

Regarding claim 11, the limitation "memory having program instructions"

is not a process, machine, manufacturer, or composition of matter, or any new

and useful improvement thereof because there is no physical

structure/connection of computer software recited in the claim. To overcome this

rejection, it is suggested to applicant to change "program instructions" to—a

computer readable medium encoded with computer executable instructions--.

Similar problems exist for claims 12-20.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   **Claims 1-3, 5-10, 11-13, 15-20** are rejected under 35 U.S.C. 102(e) as

being anticipated by Bergsson et al (US 2002/0071388 A1).

Regarding claim 1, Bergsson et al (US 2002/0071388 A1) discloses a

method ("method for facilitating packet communications between transmitting

terminal and receiving terminal", recited in paragraph 0017, lines 3-8) of

controlling ("adjust the rate of the transmission", recited in paragraph 0017, lines

3-8) a data transmission session ("communications session", recited in

paragraph 0029) by a sender ("sending terminal", recited in paragraph 0017,

lines 3-8) to a receiver ("receiving terminal", recited in paragraph 0017, lines 3-8)

over a communications network ("packet data switched network", recited in

paragraph 0035) comprising: receiving by the sender ("sending terminal", recited

in paragraph 0017, lines 3-8) from the receiver ("receiving terminal", recited in

paragraph 0017, lines 3-8) via the communications network ("packet data

switched network", recited in paragraph 0035) a plurality of data transmission

acknowledgements ("messages acknowledgement packet receipt to calculate

throughput rate", recited in paragraph 0023); generating by the sender ("sending

terminal", recited in paragraph 0017, lines 3-8) a first connection rate estimate

("throughput rate", recited in paragraph 0018) of network share using the plurality

of acknowledgements ("messages acknowledgement packet receipt to calculate

throughput rate", recited in paragraph 0023); and setting by the sender ("sending

terminal", recited in paragraph 0017, lines 3-8) a data transmission control

parameter ("congestion windows", recited in paragraph 0018) using the first

connection rate estimate ("throughput rate", recited in paragraph 0018).

Regarding claim 2, 12, Bergsson et al (US 2002/0071388 A1) the

method ("method for facilitating packet communications between transmitting

terminal and receiving terminal", recited in paragraph 0017, lines 3-8), wherein

generating ("calculation of throughput rate", recited in paragraph 0023) by the

sender ("sending terminal", recited in paragraph 0017, lines 3-8) of a connection

rate estimate ("messages acknowledgement packet receipt to calculate

throughput rate", recited in paragraph 0023) further comprises: generating a rate

sample ("using a first and second sets of packets to calculate multiple

throughputs", recited in paragraph 0032) when an acknowledgement arrives

using information in the acknowledgement regarding an amount of data ("the

number of bits in each packet", recited in paragraph 0032, lines 1-25) received by

the receiver data and an acknowledgement inter-arrival time ("updated round-

trip-time obtained each time an acknowledgement packet is received", recited in

0035); and exponentially averaging the rate sample ("average calculation",

recited in paragraph 0032, lines 6-25) with a previous rate sample to produce

smoothed rate estimate ("using plurality sets of packets to provide a smooth

function", recited in paragraph 0032, lines 10-25) using a filter ("using the leaky

bucket to adjust the congestion window", recited in paragraph 0022-the leaky

bucket algorithm plays the same role as that of the instant application) with time

varying coefficients ("updating the RTT/Round Trip-Time each time packet is

received", recited in paragraph 0035).

Regarding claim 3, **13**, Bergsson et al (US 2002/0071388 A1) discloses

the method ("method for facilitating packet communications between transmitting

terminal and receiving terminal", recited in paragraph 0017, lines 3-8), further

comprising generating a second connection rate estimate ("calculation of

throughput rate of change", recited in paragraph 0019) by the sender ("sending

terminal", recited in paragraph 0017, lines 3-8); determining by the sender

("sending terminal", recited in paragraph 0017, lines 3-8) a cause of packet loss

("unacknowledged data transmission in bytes", recited in paragraph 0036) using

the first connection rate estimate ("calculated throughput rate", recited in

paragraph 0019) and the second connection rate estimate ("calculation of

throughput rate of change", recited in paragraph 0019); and setting by the sender

a congestion window ("the transmitting terminal utilizes two different estimates to

calculate two different estimated congestion windows", recited in paragraph

0018, lines 3-12) and a slow start ("slow down in the throughput rate", recited in

paragraph 0037) threshold control parameter ("calculation of congestion window

due to the rate of change of the throughput", recited in paragraph 0036) using the

determination of the cause of packet loss ("unacknowledged data transmission in

bytes", recited in paragraph 0036).

Regarding claim 5, 15, Bergsson et al (US 2002/0071388 A1) discloses

the method ("method for facilitating packet communications between transmitting

terminal and receiving terminal", recited in paragraph 0017, lines 3-8), wherein

the first connection rate estimate ("calculated throughput rate", recited in

paragraph 0019) is a bandwidth estimate ("estimated the length round-trip pipe",

recited in paragraph 0018, lines 2-8) the method ("method for facilitating packet

communications between transmitting terminal and receiving terminal", recited in

paragraph 0017, lines 3-8) further comprising: generating a plurality of bandwidth

samples ("calculated pipe lengths", recited in paragraph 0039) using

acknowledgement pairs ("transmitting and receiving acknowledgement", recited

in paragraph 0039) taken from the plurality of acknowledgements; and

generating the bandwidth estimate ("second of the calculated pipe length",

recited in paragraph 0040) using a low pass filter ("change in the congestion

window size", recited in paragraph 0040) and the plurality of bandwidth samples

("calculated pipe lengths", recited in paragraph 0039).

Regarding claim 6,16, Bergsson et al (US 2002/0071388 A1) discloses

the method ("method for facilitating packet communications between transmitting

terminal and receiving terminal", recited in paragraph 0017, lines 3-8), wherein

the first connection rate estimate ("calculated throughput rate", recited in

paragraph 0019) is a rate estimate ("calculated throughput being applied to a

transmission rate", recited in paragraph 0023, lines 6-9), the method ("method for

facilitating packet communications between transmitting terminal and receiving

terminal", recited in paragraph 0017, lines 3-8) further comprising: generating a

plurality of rate estimates using amounts of data acknowledged ("calculations

based upon messages that acknowledge receipt of transmitted packets", recited

in abstract, lines 10-14) during sampled time intervals ("the total time and the

time of receipt of each packet", recited in paragraph 0030, lines 6-9, paragraph

0032, lines 6-8); and generating the rate estimate ("throughput calculations',

recited in paragraph 0032, lines 10-25). by applying a low pass filter ("sliding

window model", recited in paragraph 0032, lines 6-12) to the plurality of rate

estimates ("throughput calculations', recited in paragraph 0032, lines 10-25).

Regarding claim 7, 17 Bergsson et al. discloses the method ("method for

facilitating packet communications between transmitting terminal and receiving

terminal", recited in paragraph 0017, lines 3-8), further comprising adapting the

sampled time intervals ("each time of receipt of a packet", recited in paragraph

0032, lines 6-9, "round trip time", recited in paragraph 0035, lines 3-11) using a

perceived network congestion level ("calculation of potential congestion widows

which account for worst case congestion window", recited in paragraph 0023),

the perceived congestion ("calculation of potential congestion widows which

account for worst case congestion window", recited in paragraph 0023) level

determined from a difference between an expected throughput ("present state of

rate change of the system", recited in paragraph 0042) and an achieved

throughput of data ("present state of the system", recited in paragraph 0023) from

the sender ("sending terminal", recited in paragraph 0017, lines 3-8) to the

receiver ("receiving terminal", recited in paragraph 0017, lines 3-8).

Regarding claim 8,18 Bergsson et al. discloses the method ("method for

facilitating packet communications between transmitting terminal and receiving

terminal", recited in paragraph 0017, lines 3-8), further comprising setting the

congestion window ("new congestion window from the estimated congestion

windows", recited in paragraph 0018, lines 8-12) and the slow start threshold

("predetermined value", recited in paragraph 0046, lines 9-14)during startup of a

connection (fig. 2, Start of communications session", recited in paragraph 0029,

lines 3-7, paragraph 0030, lines 8-12) between the sender ("sending terminal",

recited in paragraph 0017, lines 3-8) and the receiver ("receiving terminal",

recited in paragraph 0017, lines 3-8) over the communications network

("communications session over a packet switched data network", recited in

paragraph 0029, lines 3-7).

Regarding claim 9, 19, Bergsson et al (US 2002/0071388 A1) discloses

the method ("method for facilitating packet communications between transmitting

terminal and receiving terminal", recited in paragraph 0017, lines 3-8), wherein

the data transmission session ("communications session", recited in paragraph

0029, lines 3-7) is for video data, the method ("method for facilitating packet

communications between transmitting terminal and receiving terminal", recited in

paragraph 0017, lines 3-8) further comprising: establishing a data connection (fig.

2, "full-duplex communications session where both parties are communicating",

recited in paragraph 0029, lines 3-13) between the sender ("sending terminal",

recited in paragraph 0017, lines 3-8) and the receiver ("receiving terminal",

recited in paragraph 0017, lines 3-8) via the communications network

("communications session over a packet switched data network", recited in

paragraph 0029, lines 3-7); establishing a data control connection

("Transmission Control protocol or TCP", recited in paragraph 0034) between the

sender ("sending terminal", recited in paragraph 0017, lines 3-8) and the

receiver ("receiving terminal", recited in paragraph 0017, lines 3-8); transmitting

by the sender ("sending terminal", recited in paragraph 0017, lines 3-8) to the

receiver ("receiving terminal", recited in paragraph 0017, lines 3-8) video data via

the data connection ("communications session", recited in paragraph 0029, lines

3-7, paragraph 0030); and receiving ("throughput transmitted back to the

transmitter", recited in paragraph 0034) by the sender ("sending terminal", recited

in paragraph 0017, lines 3-8) from the receiver ("receiving terminal", recited in

paragraph 0017, lines 3-8) the acknowledgements via data control connection

("acknowledgement of packet with respect to Transmission Control Protocol or

TCP", recited in paragraph 0034).

Regarding claim 10, Bergsson et al (US 2002/0071388 A1) discloses the

method ("method for facilitating packet communications between transmitting

terminal and receiving terminal", recited in paragraph 0017, lines 3-8), wherein

the acknowledgements include data control packets ("acknowledgement of

packet with respect to Transmission Control Protocol or TCP", recited in

paragraph 0034), the method ("method for facilitating packet communications

between transmitting terminal and receiving terminal", recited in paragraph 0017,

lines 3-8) further comprising: determining by the sender ("sending terminal",

recited in paragraph 0017, lines 3-8) a bandwidth estimate using the data control

packets; and altering ("updated of the calculated throughput rate", recited in

paragraph 0044, lines 13-29) by the sender ("sending terminal", recited in

paragraph 0017, lines 3-8) a data transmission rate ("updated of throughput

rate", recited in paragraph 0044, lines 13-29) and a bit rate of the transmitted

video data ("number of bits in each packet", recited in paragraph 0032, lines 3-

12).

Regarding claim 11, Bergsson et al (US 2002/0071388 A1) discloses a

data processing apparatus for controlling ("adjust the rate of the transmission",

recited in paragraph 0017, lines 3-8) a data transmission session

("communications session", recited in paragraph 0029) by a sender ("sending

terminal", recited in paragraph 0017, lines 3-8) to a receiver ("receiving terminal",

recited in paragraph 0017, lines 3-8) over a communications network ("packet

data switched network", recited in paragraph 0035), comprising: a processor (fig.

2, Calculate Throughput 204, recited in paragraph 0031, "calculated throughput

rate comprises a processor", recited in page 4, paragraph 0047, lines 18-22); and

a memory ("memory of the transmitting terminal", recited in paragraph 0035, lines

1-7, fig. 3, Flow Chart) coupled to the processor ("calculated throughput rate

comprises a processor", recited in page 4, paragraph 0047, lines 18-22), the

memory having program instructions executable ("program capable of

determining", recited in paragraph 0023, lines 1-5) by the processor stored

therein ("calculated throughput rate comprises a processor", recited in page 4,

paragraph 0047, lines 18-22), the program instructions ("program capable of

determining", recited in paragraph 0023, lines 1-5) comprising: receiving by the

sender ("sending terminal", recited in paragraph 0017, lines 3-8) from the

receiver ("receiving terminal", recited in paragraph 0017, lines 3-8) via the

communications network ("packet data switched network", recited in paragraph

0035) a plurality of data transmission acknowledgements ("messages

acknowledgement packet receipt to calculate throughput rate", recited in

paragraph 0023); generating by the sender ("transmitting agent/sending terminal

calculate throughput from messages acknowledging packet receipt", recited in

paragraph 0023) a first connection rate estimate ("calculated throughput rate",

recited in paragraph 0023, lines 4-9) of network share using the plurality of

acknowledgements ("messages acknowledging receipt of packet", recited in

paragraph 0023) and setting by the sender ("sending terminal", recited in

paragraph 0017, lines 3-8) a data transmission control parameter ("congestion

windows", recited in paragraph 0018) using the first connection rate estimate

("calculated throughput rate", recited in paragraph 0023, lines 4-9).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

4.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1,

148 USPQ 459 (1966), that are applied for establishing a background for

determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at
      issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
      obviousness or nonobviousness.

5.   This application currently names joint inventors. In considering

patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that

the subject matter of the various claims was commonly owned at the time any

inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

and invention dates of each claim that was not commonly owned at the time a

later invention was made in order for the examiner to consider the applicability of

35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35

U.S.C. 103(a).

6.   **Claims 4, 14** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Bergsson et al (US 2002/0071388 A1) in view of Banerjee et al (US

2002/0122385 A1).

     Regarding claim 4, 14, Bergsson et al. discloses the method ("method for

facilitating packet communications between transmitting terminal and receiving

terminal", recited in paragraph 0017, lines 3-8), wherein determining by the

sender ("sending terminal", recited in paragraph 0017, lines 3-8) a cause of

packet loss ("unacknowledged data transmission in bytes", recited in paragraph

0036). ("present state of the system", recited in paragraph 0023), ("present state

of rate change of the system", recited in paragraph 0042), calculating a ratio of

expected throughput ("calculated ratio of TPn/TPn-1", recited in paragraph 0038)

to achieved throughput ("throughput value at the receiver each time a packet is

calculated", recited in paragraph 0038, lines 1-5).

     Bergsson is silent with respect to the following features: determining the

cause of packet loss to be from congestion if the ratio exceeds a threshold

value, and determining the cause of packet loss   to be from data transmission

errors if the ratio of expected to achieved throughput is below the threshold

value.

However, Banerjee et al (US 2002/0122385 A1) in the same field of

endeavor discloses: calculating a ratio of expected throughput to achieved

throughput; determining the cause of packet loss (fig. 1, First Host 10, Second

Host 40, "host determines if error or congestion induced losses dominate the

data connection", recited in paragraph 0009, lines 1-14) to be from congestion

(fig. 4, Congestion dominates then packets are handled with TCP 130) if the ratio

exceeds a threshold value ("if temperament exceeds a predetermined value then

reduction in TCP reduction is due to error induced losses", recited in paragraph

0017, lines 1-22, "calculation of temperament parameter 100); and determining

the cause of packet loss (fig. 1, First Host 10, Second Host 40, "host determines

if error or congestion induced losses dominate the data connection", recited in

paragraph 0009, lines 1-14) to be from data transmission errors (fig. 2, Error

Induced losses 110, then packets are handled with modified TCP 120recited in

paragraph) if the ratio of expected to achieved throughput is below the threshold

value ("reduction in TCP throughput due to error induced packet losses", recited

in paragraph 0016, lines 1-15, "calculation of temperament parameter 100).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify the features of Bergsson et al. by using

features as taught by Banerjee et al. in order to determine the cause of packet

losses in a data connection (See paragraph 0010 for motivation).

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Meggers et al (US 6,728,270 B1) and Brooks et al (US 6,038606).

8.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Candal Elpenord whose telephone number is (571) 270-3123. The examiner can normally be reached on Monday through Friday 7:30AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Bin Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CE

KWANG BIN YAO
SUPERVISORY PATENT EXAMINER